REMARKS

Claim 1 has been amended herein to incorporate the provisions of claim 15 and claim 15 has been canceled herein. Claim 7 was previously canceled. Claims 8-14 were previously withdrawn in response to a Restriction Requirement. Claims 1-6 will remain pending following entry of this amendment. Claim 1 is independent.

Summary of Claim Rejections

In the Office Action, claims 1-6 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's admitted prior art in view of U.S. Patent Publication No. US 2004/0072060 to Ukai et al. (hereafter "Ukai").

Applicant respectfully traverses all of the rejections for at least the reasons set forth below.

Claim Rejections

Claim 1 as amended recites:

> An electrolyte electrode assembly sandwiched between a pair of separators, said electrolyte electrode assembly comprising an anode, a cathode, and an electrolyte interposed between said anode and said cathode, and bosses being formed on said pair of separators, wherein
>
> a layer is provided between said cathode and said bosses on said one of said separators, said layer comprising material which has electron conductivity higher than that of said cathode, and which is capable of inducing oxygen reduction, **the layer having a thickness in the range of 1 μm to 5 μm**.

Applicant's admitted prior art in view of Ukai fail to disclose or suggest an electrolyte electrode assembly with the claimed layer that has a thickness in the range of 1 μm to 5 μm.

The Ukai reference discusses a solid oxide fuel cell. More specifically, the Ukai reference discusses a fuel cell used for a distributed power source or cogeneration system (see Field of Invention). The described fuel cell includes a first solid electrolyte showing oxide ion conductivity,

a fuel electrode comprised of a cermet of a catalyst and a second solid electrolyte and being bonded to one side of the first solid electrolyte, and an air electrode comprised of a compound of perovskite type transition metal oxide and a third solid electrolyte and being bonded to the other side of the first solid electrolyte. The first solid electrolyte shows predetermined oxide ion conductivity and has mechanical characteristics, and the second solid electrolyte shows high oxide ion conductivity. The surface of the fuel electrode is coated with a fuel electrode contact layer and the surface of the air electrode is coated with an air contact layer. An aqueous solution where a water-soluble noble metal compound is dissolved in water is impregnated into the air electrode is also discussed(para [0001, 0033]). Of note, Ukai indicates that "**the thickness of the air electrode contact layer is preferably within 10 to 50 μm and more preferably 20 to 30 μm"** (para. [0101]).

As claim 1 now includes the elements of the former claim 15, Applicant will discuss the rejection of claim 15. In rejecting claim 15, the Examiner admitted that Ukai did not expressly teach a layer having a thickness in the range of 1μm to 5μm. However, the Examiner suggested it would have been obvious to modify the Ukai assembly to include a layer of that thickness because the result effective variables would have been obvious (Office Action, page 5). The Examiner suggested that routine experimentation would have discovered the claimed range which was a result effective variable of minimizing the resistance of a layer and that there was no evidence of criticality and the result was not unexpected (Office Action, page 5-6). However, "a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also MPEP 2144.05 II. (B). In the instant case, there is no recognition that reducing the thickness of the layer in Ukai leads to the desired result because Ukai shows exactly the opposite (i.e.: that the preferred embodiments increase the lower range bounds of the layer thickness from 10 μm to 20 μm).

Applicant respectfully submits that the Examiner's statements would appear to be incorrect from a logic standpoint. The claimed invention's range of 1μm to 5μm includes an upper limit (5μm) that is half of the lower limit of the broadest disclosed range (10 μm) in Ukai. Furthermore, Ukai indicates that **the lower limit of the most preferred range (20 μm) in Ukai is four times** the upper limit (5μm) of the range. If the **most** preferred embodiment in Ukai is significantly **larger** than the lower limit of the broader range, Applicant respectfully submits that the Examiner lacks support for his argument that normal experimentation with the Ukai system would reveal a range

whose top limit is less than the lower limit of the broader range, much less one that is less than ½ of the lower limit in the broad Ukai range. In other words, when the best functioning embodiments (in Ukai) result from an increase in thickness, the argument that normal experimentation would disclose the significantly thinner thickness claimed by Applicant would appear to be lacking in support as normal experimentation would gravitate in the direction of the better performing embodiment. It follows that thickness of the layer is not a result effective variable which would be disclosed by routine experimentation with the Ukai system.

Additionally, the claimed invention has a motivation not disclosed in Ukai. The claimed invention has the motivation of preventing peeling of the electron diffusion layer from the cathode when the fuel cell is warmed to a normal operating temperature. The peeling can occur if the electron diffusion layer is excessively thick because of a difference in the thermal expansion ratio of the layer and the cathode (see page 13, specification). Applicant is therefore motivated to make the layer as thin as possible. In contrast, Ukai makes no mention of preventing peeling and in fact teaches away from this motivation by suggesting that a thicker layer 20 to 30 μm is the most preferred embodiment.

Accordingly, for at least these reasons, Applicant respectfully requests the reconsideration and allowance of claim 1 as well as claims 2-6 which depend thereon.

CONCLUSION

In view of the above amendments and remarks, Applicant believes the pending application is in condition for allowance and urges the Examiner to pass the claims to allowance. Should the Examiner feel that a teleconference would expedite the prosecution of this application, the Examiner is urged to contact the Applicant's attorney at (617) 227-7400.

Please charge any shortage or credit any overpayment of fees to our Deposit Account No. 12-0080, under Order No. TOW-163US. In the event that a petition for an extension of time is required to be submitted herewith, and the requisite petition does not accompany this response, the undersigned hereby petitions under 37 C.F.R. § 1.136(a) for an extension of time for as many months as are required to render this submission timely. Any fee due is authorized to be charged to the aforementioned Deposit Account.

Dated: September 8, 2010

Respectfully submitted,

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